

## Claims

[c1] 1. A method of expanding an redundant array of independent disks (RAID), wherein the RAID comprises M number of storage devices, and each of the storage devices comprises N number of storage blocks, which are defined as:

$D_{I,J}$ : the  $J^{\text{th}}$  data block of the  $I^{\text{th}}$  storage device;

$P_{I,J}$ : the  $J^{\text{th}}$  data block of the  $I^{\text{th}}$  storage device, being a parity data block;

wherein, I is a positive integer of  $1 \sim M$ , J is a positive integer of  $1 \sim N$ , and the arrangement order of the storage devices is: if  $D_{I,J} = P_{I,J}$ , then  $D_{I-1,J+1} = P_{I-1,J+1}$ , the method comprising:

providing an expansive storage device;

disposing the expansive storage device in front of the storage devices, wherein the  $Y^{\text{th}}$  data block of the expansive storage device is represented as  $D_{0,Y}$ ; and

sequentially moving the  $D_{I,J}$  data blocks except  $P_{I,J}$ ,

wherein Y is a positive integer of  $1 \sim N$ , and if  $D_{X,Y} = P_{X,Y}$ , then  $D_{X-1,Y+1} = P_{X-1,Y+1}$ , and wherein X is a positive integer of  $0 \sim M$ .

[c2] 2. The method of expanding RAID of claim 1, wherein

the step of sequentially moving  $D_{I,J}$  further comprises sequentially moving  $D_{I,J}$  in an ascending order based on the sequence of an I value.

[c3] 3. The method of expanding RAID of claim 1, wherein the step of sequentially moving  $D_{I,J}$  further comprises sequentially moving  $D_{I,J}$  in an ascending order based on the sequence of a J value.

[c4] 4. A method of expanding an redundant array of independent disks (RAID), wherein the RAID comprises M number of storage devices, and each of the storage devices comprises N number of storage blocks, which are defined as:

$D_{I,J}$ : the  $J^{\text{th}}$  data block of the  $I^{\text{th}}$  storage device;

$P_{I,J}$ : the  $J^{\text{th}}$  data block of the  $I^{\text{th}}$  storage device, being a parity data block;

wherein, I is a positive integer of  $1 \sim M$ , J is a positive integer of  $1 \sim N$ , and a same  $J^{\text{th}}$  data block in the storage devices comprises at least a parity data block, the method comprising:

providing an expansive storage device;

disposing the expansive storage device in front of the storage devices, and the  $Y^{\text{th}}$  data block of the expansive storage device is represented as  $D_{0,Y}$ ; and

sequentially moving the  $D_{I,J}$  data blocks except  $P_{I,J}$ ,

wherein Y is a positive integer of  $1 \sim N$ , and the positions

of the parity data block of the same  $J^{\text{th}}$  data block in the storage devices are the same.

[c5] 5. The method of expanding RAID of claim 4, wherein the step of sequentially moving  $D_{I,J}$  further comprises sequentially moving  $D_{I,J}$  in an ascending order based on the sequence of an I value.

[c6] 6. The method of expanding RAID of claim 4, wherein the step of sequentially moving  $D_{I,J}$  further comprises sequentially moving  $D_{I,J}$  in an ascending order based on the sequence of a J value.